



GOVERNMENT OF ASSAM

Report on the Crop Estimation Surveys on principal Food and Non-Food Crops in Assam

1970-71

**DEPARTMENT OF ECONOMICS AND STATISTICS
GOVERNMENT OF ASSAM
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**REPORT ON CROP ESTIMATION SURVEYS ON PRINCIPAL FOOD
AND NON-FOOD CROPS IN ASSAM
1970-71**

1. Introduction

1.1 Crop estimation survey on principal food and non-food crops is one of the normal programmes of the Department of Economics and Statistics. These surveys are conducted every year in the different districts of the State, and this report presents the results of the surveys conducted during 1970-71 in the State of Assam (excluding Meghalaya).

1.2 The surveys conducted during the year covered the usual principal Kharif and Rabi crops viz. Autumn paddy, Winter paddy, Jute, Rape and Mustard, Potato, Sugarcane and Matikalai. The object of the surveys was to determine the yield rates of the crops and to estimate the productions of those crops for individual districts and for the State as a whole.

2. Coverage.

2.1 The surveys on Autumn paddy and Winter paddy were conducted in all the districts except Mizo district. The coverage was restricted in case of Jute, to the four main Jute growing districts viz. Goalpara, Kamrup, Darrang and Nowgong. The survey was conducted in all the seven plains districts in case of Potato while in respect of Matikalai the surveys was confined to five plains districts only viz. Goalpara, Kamrup, Darrang, Nowgong and Sibsagar. The surveys on Rape and Mustard and Sugarcane were conducted in all the seven plains districts and also in Mikir and N.C. Hills.

2.2 The table below shows the total area under each crop in the State as per final forecast 1970-71 and the area covered by crop estimation surveys during the year under those crops with their percentages to the total area.

Crop	Total area according to final forecast 1970-71 (Hectares)	Area covered by crop estimation surveys (Hectares)	Percentage of total area covered
1	2	3	4
1. Autumn paddy	5,27,330	5,27,890	100%
2. Winter paddy	14,46,755	14,14,330	97.76%
3. Potato	24,570	24,180	98.01%
4. Jute	1,29,355	1,21,230	93.72%
5. Sugarcane	32,830	32,230	98.17%
6. Rape and Mustard	1,37,140	1,37,140	100%
7. Matikalai	49,565	44,480	89.74%

3. Design.

3.1 The statistical design adopted for the crop estimation surveys is one of the multi-stage stratified random sampling with the Revenue circles or Sub-divisions as the strata. The units in the different stages were taken as follows : villages as the first-stage units, fields growing the crop under survey as second stage units and the experimental plots of specified size in the selected field as the ultimate stage units. In case of Autumn paddy, Winter paddy, potato and Rape and Mustard, the Revenue circles were taken as the strata while in respect of Jute, Sugarcane and Matikalai, the Sub-divisions were considered as the strata in the plains districts. In case of Mikir and N.C. Hills, the district itself was considered as strata.

3.2 Within each stratum, a certain number of villages were selected at random for each crop, the number of selected villages being roughly in proportion to the area under the individual crops in the respective strata. In case

of Mikir and N.C.Hills the list of villages growing the individual crops constituted the sampling frame for selection of villages.

3.3 In each selected village, two fields growing the crop were selected at random and in each selected field a plot of size 5m x 5m was randomly located for conducting the crop cutting experiments except in case of potato. As the cultivation of potato in the plains districts is in row-system, the size of the experimental plot varied from field to field depending on the spacing between the rows. The experimental plot in case of potato consisted of seven consecutive rows each measuring 5 metres in length. Locating and marking the experimental plots, harvesting and threshing the produce, recording the weight of the produce etc. were the different stages of the experiments.

3.4 The dridge experiments in respect of Autumn paddy, Winter paddy, Rape and Mustard and Matikalai were conducted centrally in the Statistical Offices at district/sub-division level under the direct supervision of the Statistical Officers with a view to arrive at an estimate of the percentage recovery of dry grains from the freshly harvested grains. These experiments were confined to a sub-sample of villages only.

3.5 In case of Jute, supplementary operations like retting, extraction of fibres, drying of fibres, recording of final weights etc. were carried out only in 50 per cent of the selected villages. For arriving at an estimate of ratio of cane to gur, subsequent operations like extraction of juice, preparation of gur etc. were conducted in a limited number of experiments.

3.6 The number of dridge experiments planned and actually conducted in different districts for all crops are shown in table 9.1.

4. Organisation.

4.1 The crop estimation surveys were conducted under the administrative and technical control of the Director of Statistics, Assam, in consultation with the Chief Director, National Sample Survey, Govt. of India. All the technical works such as, Planning of the survey including selection of villages, imparting training to the field staff, carrying out analysis of the results etc. were done by the technical staff of the Agricultural Statistics section of the Department of Economics and Statistics, Assam.

4.2 The field work of the surveys was carried out by the Field Assistants of the Department of Economics and Statistics, Assam, under the direct control and supervision of the Statistical Officers in the different districts and Sub-divisions. The lists of selected villages for the surveys were supplied to the respective Statistical Officer from the Headquarters at Shillong well in advance and the Statistical Officers in the districts and Sub-divisions in their turn, allotted the villages to the Field Assistants for conducting crop estimation surveys. The work load of the field-staff engaged in the different crop estimation surveys in the different districts is shown in table 14.1.

5. Training.

5.1 A programme of refresher's training is generally arranged for the benefit of the field staff just before the commencement of different crop estimation surveys every year. During the year under report, necessary training was imparted to the Field Assistants in the technique of field experimentation before starting the actual field work. During the year, the training was organised in three centres viz. at Gauhati, Nowgong and Jorhat in the month of October. The supervisory and field staff of Goalpara, Darrang and Kamrup districts participated in the training organised at Gauhati and those of Cachar, Mikir and N.C. Hills and Nowgong at Nowgong centre. The supervisory and field staff of Lakhimpur and Sibsagar districts participated in the training organised at Jorhat. The training was imparted by the officers deputed from Headquarters and the supervisory staff of the National Sample Survey Organisation posted at Shillong. Out of the total strength of 49 Field Assistants 30 had attended the training. Of the rest 19 Field Assistants not attending the training, 3 posts were vacant, 8 Field Assistants were on leave, one was sick, one Field Assistant was under order of transfer at the time of the training.

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The other staff of the districts such as Statistical Officers, Inspector of Statistics, Sub-Inspectors of Statistics, Primary Investigators also attended the training.

The details of training and attendance of the staff are given in table 13.1.

6. Equipments.

6.1 All the essential equipments required for successful operations of the field work such as tape, balance, standard weight, string, hessian cloth kit-box etc. were supplied except the pegs which were locally procured by the field staff. The details of equipments supplied to the field staff in the different districts are given in table 12.1.

7. Response.

7.1 The district-wise details of number of experiments planned conducted and accepted for analysis with their percentage responses are given in table 1.1. The overall response was found to be satisfactory for all the crops. The percentage responses for the State as a whole were above 96 p.c. for all crops except for Rape and Mustard and Matikalai. In case of Rape and Mustard the response was 92.2 p.c., while the response in case of Matikalai was 85.6 per cent. Cent percent response was achieved in all the districts in case of Autumn paddy. The over all responses in all the districts were above 90 p.c. During the year cent percent response was achieved in Sibsagar district. In Mikir and North Cachar Hills and Lakhimpur District also cent percent response was achieved for all the crops except sugarcane in Mikir and N.C. Hills and Potato in Lakhimpur. In case of Winter paddy the over all response was 98.8 p.c. For this crop cent percent response was achieved in all the districts other than Kamrup, Nowgong and Cachar. The statement of non-response is shown in table 10.1.

8. Supervision.

8.1 The supervision of field work in the different crop estimation surveys was entrusted to the District/Sub-divisional supervisory staff. The programme of supervision in pre-assigned villages was arranged in a sub-sample of about 25 p.c. of the sample villages selected randomly in all the districts in respect of Autumn paddy, Winter paddy and Jute surveys for ensuring the quality of the data for the surveys as well as for judging the accuracy of the overall estimates. A total of 376 experiments were planned for such supervision of which only 303 experiments could be supervised by the supervisory staff, the percentage of response being 80.59 percent. Beside these pre-assigned experiments some other experiments were also supervised at harvest stage. In respect of Potato, Sugarcane, Rape and Mustard and Matikalai harvest stage supervision was carried out on 226 experiments or 17.25 percent of the total number of experiments planned for those crops. The details of supervision carried out in the different districts are shown in table 8.1. It will be seen from the table that the over-all supervision at harvest stage was 21.1 percent of the total no. of experiments planned.

8.2 In addition to harvest stage supervision, some experiments were supervised by the district supervisory staff at pre-harvest and post-harvest stages. The total no. of experiments supervised at pre-harvest stage was 102 while the no. of experiments supervised at post-harvest-stage was 111 in the State. The particulars of those experiments are presented in table 8.2 of this report.

8.3 The supervisory staff of the Directorate of National Sample Survey (Agricultural Statistics Section), Government of India, posted at Shillong carried out independent supervision in case of different crop estimation surveys. The no. of experiments supervised by them at different stages are shown below :

Crops	Pre-harvest	Harvest	Post-harvest	Driage	Total	Total (exclusive)
1	2	3	4	5	6	7
1. Autumn paddy	17	62	6	-	85	78
2. Winter paddy	46	77	5	-	128	114
3. Jute	13	17	12	6	48	48
4. Potato	19	23	4	-	46	45
5. Rape and Mustard	12	18	26	-	56	52
6. Sugarcane	17	25	13	-	55	52
7. Matikalai	8	15	3	-	26	26
Total	132	237	69	6	444	415

3.4 of In case/supervisions in different crop estimation surveys by the State supervisory staff and the supervisory staff of the National Sample Survey Organisation, posted at Shillong, it was observed that the quality of field work was good and no mistakes in technical aspects of the different crop estimation surveys were noticed. The primary workers were found trained and fully conversant with the technique of crop estimation surveys.

The supervisory staff of Central NSSO, posted at Shillong contacted thirty seven primary workers during Kharif season in seven districts out of 44 primary workers. Eighty four percent of the primary workers contacted were allotted with more than twenty experiments each and 16 p.c. between nine to twenty experiments each. During the Rabi season 1970-71 they contacted 29 primary workers in six districts and noted that all the primary workers were allotted with twenty experiments and above.

It was observed during the supervisions that substitution of survey numbers/fields were done in few cases due to prior harvest of the experimental crops. Information on harvest dates was available at the office of the Statistical Officers about two weeks in advance in respect of all crops except for sugarcane. Harvesting of Sugarcane depends on the availability of the crushing machine and as such no advance intimation of harvest dates could be available like other crops.

9. Procedure of calculation of Average yield of different crops.

9.1 Paddy : In case of paddy, the plot yields recorded in the returns were in terms of grains immediately after thrashing. These plot yields were converted to dry and clean rice in kilogram per hectare. The results of the driage experiments showed that the average moisture contents in the grains was 10.44 percent in case of Autumn paddy and 9.62 percent in case of Winter paddy for the State as a whole (Table 9.2). The dry paddy was then converted to rice by adopting the official conversion factor (62.5 percent) for recovery of rice from paddy.

The stratum average yields were obtained as simple arithmetic mean of the results of all the experiments in the stratum whereas the district average yields were obtained as the weighted average of the stratum average yields, weights being the actual areas under the crop in the respective stratum during the year 1969-70. In case of Mikir and N.C.Hills districts, the district as a whole was considered as a stratum. The average yield for the entire region covered by the survey was obtained as the weighted average of the district averages, weights being the areas under the crop as per final forecast, 1970-71.

9.2 Potato : The stratum average yields were obtained as simple arithmetic mean of the results of all experiments in the stratum expressed in kilogram

per hectare, whereas the district and pooled average yields were obtained as the weighted average yields, weights being the actual area in the respective strata during 1969-70 and district areas as per final forecast, 1970-71 respectively.

9.3 Sugarcane The stratum average yields and the pooled estimates for the districts and the state were obtained in the same procedure as adopted in case of potato. The supplementary operations were carried out in all the 26 experiments planned for obtaining the ratio of gur to cane and the results of the experiments were applied for estimating production in terms of gur. The results of the experiments showed that the ratio of gur to cane was 10.51 p.c. (table 9.2).

9.4 Rape and Mustard: The experimental yields recorded in the returns were in terms of freshly harvested seeds. Before further analysis the plot yields were corrected for reduced of moisture after iriage. The central iriage experiments showed an average moisture content of 8.14 percent for the entire region covered by the survey (table 9.2).

9.5 Jute The average weight of the "green" harvest for each stratum was obtained as the simple arithmetic mean of the results of the experiments in the stratum. The district and pooled average yields of "green" harvest were obtained as weighted averages, weights being the area under jute in the different sub-divisions during 1969-70 and districts areas as per final forecast 1970-71 respectively.

From the results of the subsequent operations carried out in a sub-sample of 50% of the selected villages, estimates of ratio of dry fibres to "green" weight were worked out for individual districts which are shown below along with the district average of "green" weight. The district estimates of average yields of dry fibres were worked out from the average yields of "green" weight and average percentage ratio of dry to green yields, assuming them to be independent variables.

District	Average yield in green weight (Kg./plot.)	Percentage sampling error.	Average per- centage ratio of dry to green yield.	Percentage sampling error.
	2		4	5
Goalpara	80	4.14	4.87	3.35
Kamrup	62	3.69	4.46	9.22
Darrang	50	10.18	5.50	3.19
Nowgong	51	6.13	5.47	5.48
Pooled	65	3.43	5.06	2.87

9.6 Matikalai. The plot yields recorded in the returns were in terms of freshly harvested grains. Before carrying out further statistical analysis the results were converted to dry grains. The results of the central iriage experiments showed that the average moisture content in the freshly harvested grains was 5.79 p.c. for all the districts taken together (Table 9.2). The district estimates of average yields were obtained as the weighted averages of the stratum averages, weights being the actual areas under the crop in the respective strata during, 1969-70. Similarly the pooled estimate was obtained as the weighted average of the district averages, weights being the district area as per final forecast, 1970-71.

10. Estimates of Average Yield.

10.1 The following table shows the estimates of average yields of the different crops by districts along with the corresponding pooled estimates for the region covered by the surveys.

(in Kg./Hect.)

District	Autumn Paddy	Winter Paddy	Potato	Jute	Sugarcane (in terms of cane)	Rape and Mustard	Matikalai
1	2	3	4	5	6	7	8
1. Goalpara	747	877	5645	1558	45510	406	369
2. Kamrup	597	933	4753	1106	35072	344	249
3. Darrang	746	1195	4454	1100	32754	463	465
4. Nowgong	520	1033	2420	1335	35907	294	410
5. Sibsagar	773	1300	5456	-	43116	436	342
6. Lakhimpur	904	1135	4384	-	38375	547	-
7. Cachar	974	1253	1831	-	19132	376	-
8. United Mikir and N.C. Hills	1499	1515	-	-	45472	859	-
Total	731	1126	4524	1304	37217	412	347

10.2 The area under, production and yields rates of the different crops over a period of five years are presented in tables 3.1(A) to 3.7(A) for their comparisons.

11. Analysis of Variance.

11.1 The results of the analysis of variance of plot yields are given in tables 5.1 to 5.7. The total variation between plot yields was analysed into two component variation viz the variation between villages and variation between fields within village which are given by the corresponding mean squares.

11.2 The mean square between fields within village is an estimate of the corresponding true variance while the mean square between villages does not provide an estimate of the corresponding variance. The latter is a function of the two estimated mean squares, the number of villages and the number of fields in the sample, and can readily be computed. Tables 6.1 to 6.7 show the number of villages with varying no. of fields required for estimating the average yield at different level of precision in terms of percentage sampling error.

The formula used for calculating the mean squares and the sampling variance for paddy are given in the appendix.

12. Weather and Crop condition.

12.1 Autumn Paddy: The weather in general was more or less favourable to this crop barring, of course, Lakhimpur, Darrang and Cachar districts where excessive rainfall hampered the growth of the crop.

There was considerable damage to the crop by flood in some of the districts at flowering stage. The area under the crop had decreased to a considerable extent in Mikir and N.C. Hills due to draught during the sowing period. However the weather was favourable for the crop in the later stages. The area under the crop was 5,27,830 hectares during 1970-71 against 5,20,385 hectares (excluding Meghalaya) in 1969-70.

The average yields were lower than those of the previous year in most of the districts except in Goalpara, Sibsagar and Mikir and N.C. Hills. Damage by insectpest, weed infestation, rice bug and stemborers were negligible during the year. The estimated production of Autumn rice during 1970-71 was 3,79,573 tonnes as against the production of 3,72,441 tonnes (excluding Meghalaya) during 1969-70.

12.2 Winter Paddy : The weather in general was favourable to the crop except in few districts in the State during the year under report. In some of the districts draught condition prevailed at the time of transplantation and as a result the areas under cultivation of this crop in those districts had gone down in comparison to the previous year. The standing crops were affected by flood in some districts. Minor damages by insect pests were reported from some regions of the State. The area under the crop decreased during the year in Kamrup, Darrang and Nowgong districts in comparison to previous year. The total area during 1970-71 under the crop in the State, which was estimated at 14,18,700 hectares showed an increase of about 0.7 p.c. only over the area of 14,35,431 hectares (excluding Meghalaya) during 1969-70.

The average yields were found to be higher in all the districts except in Goalpara, Lakhimpur and Mikir and N.C.Hills in comparison to the average yields of the previous year.

The total production of Winter rice for the State was estimated at 15,04,317 tonnes against 13,35,551 tonnes during 1969-70 (excluding Meghalaya) showing an increase of about 15.70 p.c.

12.3 Jute The weather was found to be moderately favourable to the crop at the time of preparation of land and sowing period.

The total area under the crop was estimated at 1,22,300 hectares during 1970-71 against 1,22,012 hectares (excluding Meghalaya) during 1969-70. The increase in area was mainly due to favourable weather condition at the primary stage of operation. But the growth of the crop was adversely affected in almost all the districts and as a result the yield rates suffered a setback during the year under report. The production of Jute during 1970-71 was estimated at 9,35,775 bales of 180 kg. each against the production of 10,81,700 bales in 1969-70 (excluding the production in Jaro Hills under Meghalaya).

12.4 Rape and Mustard The weather condition for the crop under report was not much favourable during the year. However, in comparison to the previous years areas were brought under cultivation in Kamrup, Darrang, Sibsagar, Lakhimpur and Mikir Hills districts. Reports from the districts revealed that the weather during flowering stage was dry in some of the districts and this adversely affected the growth of the crop. The estimated area under Rape and Mustard during 1970-71 was 1,57,140 hectares as against the area of 1,34,200 hectares (excluding Meghalaya) in 1969-70. During the year under report, the average yields showed an increase in Cachar, Kamrup, Darrang, Lakhimpur and Mikir Hills districts over those in the previous years. The estimated production during 1970-71 showed an increase of about 11.12 p.c. over the production of 1969-70. The production was estimated at 56,468 tonnes during 1970-71.

12.5 Sugarcane : Our field reports from all over the State showed that the over all weather condition was none too favourable for Sugarcane during the year under report. In Cachar and Kamrup districts excessive rainfall was partly responsible for the damage of the crop. In Mikir Hills dry weather at the pre-sowing stage was the cause of delay in early operations. However, the weather was favourable for the crop in the subsequent operations in the district. Insect pests caused some damages in certain parts of the State. The estimated area under Sugarcane was 32,830 hectares in the State during 1970-71 against 32,855 hectares in 1969-70 (excluding Meghalaya). The average yields recorded a decrease in all the districts except in Mikir and N.C.Hills during the year in comparison to those of 1969-70. The over all production of Sugarcane in terms of gur was 1,28,416 tonnes in the State during 1970-71 against 1,61,963 tonnes during 1969-70 (excluding Meghalaya).

12.6 Potato : The general weather for the crop was more or less favourable to the crop in the after ^{sowing} stages in the State except in Cachar district. Draughty condition prevailed at the sowing period in some of the districts during the year and as a result the area under the crop recorded a decrease in those districts as against the area during the previous year. In Cachar district the crop was subjected to damage by excessive rainfall and flood. The extent of damage was estimated at 20 to 50 p.c. in the district. The yield rates in all the districts except in Cachar showed an increase over the previous year. Reports of damage by insect pests were received from Goalpara, Sibsagar, Lakhimpur and some parts of Kamrup districts.

The area under the crop was estimated at 24,670 hectares in the State during 1970-71 against 26,250 hectares during 1969-70.

The estimated production for 1970-71 was 1,11,617 tonnes as against 93,782 tonnes in 1969-70 which meant an increase of about 19.02 p.c.

12.7 Matikalai : The weather was not favourable for the crop at the sowing and post sowing stages in almost all the districts. The crop was damaged by rainwater in some regions of Kamrup and Nowgong districts and as a result as many as 25 experiments were lost in Kamrup district. The average yields had decreased in Goalpara, Nowgong and Sibsagar districts in comparison to the previous year. The estimated area under the crop had decreased from 56,390 hectares during 1969-70 to 49,565 hectares in 1970-71. The production of Matikalai was estimated at 17,199 tonnes, in the State during 1970-71 as against 21,086 tonnes during 1969-70.

Table-1.1

Number of Experiments planned, conducted successfully and percentage response.

District	Autumn paddy			Winter paddy			Potato			Rape and mustard			Sugarcane			Jute		
	P	C	P.R.	P	C	P.R.	P	C	P.R.	P	C	P.R.	P	C	P.R.	P	C	P.R.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Goalpara	90	80	100.0	34	84	100.0	96	32	95.3	60	58	96.6	24	22	91.6	84	84	100.0
2. Kamrup	100	100	100.0	112	109	97.3	78	73	100.0	72	62	96.1	42	39	90.4	84	84	100.0
3. Darrang	68	68	100.0	78	78	100.0	64	64	100.0	58	58	100.0	24	24	100.0	42	42	100.0
4. Nowgong	60	60	100.0	74	73	98.6	32	26	81.2	60	46	76.6	32	31	96.8	96	84	97.6
5. Sibsagar	50	50	100.0	90	90	100.0	34	34	100.0	33	38	100.0	60	60	100.0	-	-	-
6. Lakhimpur	52	52	100.0	82	82	100.0	50	46	92.0	30	30	100.0	30	30	100.0	-	-	-
7. Cachar	60	60	100.0	72	69	95.8	36	36	100.0	20	18	90.0	36	36	100.0	-	-	-
Plains:																		
Total	470	470	100.0	592	585	98.8	330	366	96.3	338	310	91.7	243	241	97.1	296	294	99.3
3. United Mikir & N.C. Hills.																		
Hills																		
Total	40	40	100.0	44	44	100.0	-	-	-	22	22	100.0	22	20	90.9	-	-	-
State	510	510	100.0	636	629	98.8	390	366	96.3	360	332	92.2	270	261	96.6	296	294	99.3

Contd.....

Table - 1.1 (Contd.)

District	Matikalsi			Total		
	P	C	P.R.	P	C	P.R.
1	20	21	22	23	24	25
1. Goalpara	72	66	91.6	490	476	97.1
2. Kamrup	86	62	70.9	574	532	92.6
3. Darrang	49	44	91.6	382	378	98.8
4. Nongong	54	46	85.1	398	366	91.9
5. Sibsagar	40	40	100.0	312	312	100.0
6. Lakhimpur	-	-	-	244	240	98.3
7. Cachar	-	-	-	224	219	97.7
Plains Total	300	257	95.6	2624	2523	96.1
8. United Mikir and N.C.Hills.	-	-	-	128	126	98.4
Hills Total	-	-	-	128	126	98.4
State Total	300	257	95.6	2752	2649	96.2

P = Planned, C = Conducted, P.R. Percentage Response.

Table -2.1.

Estimates of Average yields of Autumn Rice with their sampling errors

District	Average Yield Kg./hec.	Sampling error Kg./hec.	Percentage sampling error	Average Yield (in terms of paddy) Kg./hec.
1	2	3	4	5
1. Goalpara	747	46.63	6.24	1195
2. Kamrup	597	49.62	8.31	955
3. Darrang	746	46.64	6.25	1194
4. Nowgong	520	58.38	11.23	932
5. Sibsagar	776	157.23	20.26	1242
6. Lakhimpur	904	60.29	6.67	1446
7. Cachar	974	68.90	7.08	1558
8. United Mikir and N.C.Hills.	1499	72.34	4.83	2398
Pooled	731	23.43	3.21	1170

Table -2.2.

Estimates of Average Yields of Winter Rice with their Sampling errors.

District	Average Yield Kg./hec.	Sampling error Kg./hec.	Percentage sampling error.	Average yield (in terms of paddy) Kg./hec.
1	2	3	4	5
1. Goalpara	877	32.51	3.71	1403
2. Kamrup	993	45.03	4.54	1589
3. Darrang	1195	55.51	5.48	1912
4. Nowgong	1093	55.78	5.15	1733
5. Sibsagar	1300	55.37	4.30	2030
6. Lakhimpur	1135	36.51	3.22	1816
7. Cachar	1258	39.13	3.11	2013
8. United Mikir and N.C.Hills	1515	64.67	4.27	2424
Pooled	1126	19.14	1.61	1802

Table - 2.3

Estimates of Average Yields of Potato with their Sampling errors.

District	Average Yield Kg./hec.	Sampling error Kg./hec.	Percentage sampling error.
1. Goalpara	5645	444.09	7.87
2. Kamrup	4758	355.21	7.63
3. Darrang	4454	337.48	7.58
4. Nowgong	2420	220.30	9.10
5. Sibsagar	5456	725.77	13.30
6. Lakhimpur	4384	259.99	5.91
7. Cachar	1831	250.53	13.32
Pooled	4524	167.48	3.70

Table - 2.4.

Estimates of Average Yields of Sugarcane with their Sampling errors.

District	Average Yield (in terms of cane) Kg./hec.	Sampling error Kg./hec.	Percentage sampling error.	Average yield (in terms of suc) Kg./hec.
1	2	3	4	5
1. Goalpara	45510	4736.04	10.41	4783
2. Kamrup	35072	3265.31	9.31	3696
3. Darrang	32754	4517.78	13.79	3442
4. Nongong	36907	3590.46	9.73	3868
5. Sibsagar	43116	3309.49	7.68	4531
6. Lakhimpur	38375	2879.30	7.41	4006
7. Cachar	19132	2331.27	15.06	2011
8. United Mikir and N.C.Hills.	45472	3363.41	7.40	4779
Pooled	37217	1337.48	3.59	3912

Table - 2.5

Estimates of Average Yields of Jute (Dry Fibre) with their Sampling errors.

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District	Average Yield Kg./hec.	Sampling error Kg./hec.	Percentage sampling error
I	2	3	4
1. Goalpara	1558	93	5.33
2. Kamrup	1106	140	12.66
3. Darrang	1100	117	10.67
4. Nowgong	1335	110	8.22
Pooled	1304	58	4.47

Table - 2.6.

Estimates of Average Yields of Rape and Mustard with their Sampling errors.

District	Average yield Kg./hec.	Sampling error Kg./hec.	Percentage sampling error.
1	2	3	4
1. Goalpara	406	19.65	4.59
2. Kamrup	344	32.29	9.39
3. Darrang	463	44.21	9.55
4. Nongong	294	50.01	17.01
5. Sibsagar	436	87.71	20.12
6. Lakhimpur	547	29.00	5.30
7. Cachar	376	144.06	38.31
8. United Mikir and N.C.Hills.	859	66.53	7.75
Pooled	412	17.08	4.15

Table - 2.7

Estimates of Average Yields of Matikalai with their Sampling errors.

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District	Average yield Kg./hec.	Sampling error Kg./hec.	Percentage sampling error
1. Goalpara	368	40.20	10.92
2. Kamrup	249	21.72	8.72
3. Darrang	465	81.28	17.48
4. Nongong	410	60.25	14.70
5. Sibsagar	342	34.93	10.21
Pooled	347	21.33	6.15

Table -3.1

Estimates of Production of Autumn rice.

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District	Area as per final forecast, 1970-71 (in hectare)	Area corrected for bunds 1.60%	Production in tonnes.
1	2	3	4
1. Goalpara	1,31,520	1,29,416	96,674
2. Kamrup	1,73,600	1,70,822	1,01,981
3. Darrang	62,320	61,323	45,747
4. Nowgong	43,000	47,232	24,561
5. Sibsagar	21,950	21,500	16,684
6. Lakhimpur	33,390	32,856	29,702
7. Cachar	39,000	39,376	37,378
8. United Mikir and N.C.Hills.	19,200	17,909	25,846
S t a t e	5,27,880	5,19,434	3,79,573

Table -3.2.

Estimates of Production of Winter Rice

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District	Area as per final fore-cast, 1970-71 (in hectares)	Area corrected for bunds 1.54%	Production in tonnes
	2	3	4
1. Goalpara	1,98,300	1,95,246	1,71,231
2. Kamrup	2,54,850	2,50,925	2,49,169
3. Darrang	1,79,680	1,76,913	2,11,411
4. Nowgong	1,60,000	1,57,536	1,70,611
5. Sibsagar	2,30,000	2,26,458	2,94,395
6. Lakhimpur	1,99,000	1,94,951	2,21,269
7. Cachar	1,51,650	1,49,315	1,87,838
8. United Mikir and N.C. Hills.	41,300	41,255	62,501
Pooled	14,14,390	13,92,599	15,63,425
State	14,46,755	14,24,475	16,04,317

Table -3.3
Estimates of Production of Potato

District	Area as per final forecast, 1970-71 (in hectare)		Production in tonnes
	1	2	
1. Goalpara	6,860		38,725
2. Kamrup	5,000		23,790
3. Darrang	4,270		19,019
4. Nongpang	1,530		3,751
5. Sibsagar	1,030		5,729
6. Lakhimpur	3,230		14,248
7. Garo	2,800		4,138
Pooled	24,130		1,09,400
State	24,670		1,11,619

Estimates of Production of Jute

District	Area as per final forecast, 1970-71 (in hectare)	Production in bales of 180 kg. each.	Production in tonnes.
	2	3	4
1. Goalpara	35,000	3,02,944	54,530
2. Kamrup	29,600	1,91,375	32,733
3. Darrang	20,610	1,25,950	22,671
4. Nongong	36,020	2,67,148	48,087
Pooled	1,21,230	8,77,917	1,58,026
State	1,29,355	9,36,779	1,68,620

Table -3.5
Estimates of Production of Sugarcane

District	Area as per final forecast, 1970-71 (in hectare)	Production in terms of cane (in tonnes)	Production in terms of Sur (in tonnes)
1	2	3	4
1. Goalpara	2,430	1,10,589	11,623
2. Kamrup	4,540	1,59,227	16,735
3. Darrang	2,670	97,453	9,191
4. Nongong	3,380	1,24,408	13,075
5. Sibsagar	9,050	3,90,200	41,012
6. Lakhimpur	3,400	1,32,175	13,892
7. Cachar	4,250	21,311	3,546
8. United Mikir and N.C. Hills.	2,510	1,14,135	11,995
Pooled	32,230	11,99,498	1,26,069
State	32,930	12,21,828	1,29,416

Table -3.6

Estimates of Production of Rape & Mustard,

District	Area as per final forecast, 1970-71 (in hectare)	Production in tonnes.
I	2	3
1. Goalpara	26,300	10,678
2. Kamrup	32,130	11,070
3. Darrang	23,270	10,774
4. Nowgong	21,930	6,433
5. Sibsagar	14,700	6,409
6. Lakhimpur	14,000	7,658
7. Cachar	1,420	534
8. United Mikir and N.C.Hills.	3,390	2,912
Pooled	1,37,140	56,468
State	1,37,140	56,468

Table -3.7
Estimates of Production of Matikamal

District	
	Area as per final forecast, 1970-71 (in hectare)	Production in tonnes
1	2	3
1. Goalpara	10,500	3,864
2. Kamrup	16,100	4,009
3. Darrang	7,840	3,646
4. Nowgong	7,100	2,911
5. Sibsagar	2,940	1,005
Pooled	44,480	15,435
State	49,565	17,199

Table -3.1(A).

Statement showing the area, production and yield rate over five years of Autumn paddy

Area in hectares.
Production in tonnes.
Average yield in Kg./hect.

District	1966-67			1967-68			1968-69			1969-70			1970-71		
	Area	Production	Av. yield.	Area	Production	Av. yield.	Area	Production	Av. yield.	Area	Production	Av. yield.	Area	Production	Av. yield.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Cachar	36422	23219	648	38443	41159	1083	39445	23105	611	38445	39562	1046	39000	37378	974
2.Goalpara	123429	68122	561	121406	93403	740	131523	93651	724	127476	34025	670	131520	96674	747
3.Kamrup	149734	74243	504	161974	109747	639	174015	113651	664	172801	111351	655	173600	101981	597
4.Darrang	57061	37219	663	57870	51705	903	61715	53054	874	61715	47904	789	62320	45747	746
5.Nowgong	33539	16655	504	34343	19303	563	45134	35348	790	44515	23123	528	48000	24561	520
6.Sibsagar	18211	6772	378	20234	14793	743	20234	12081	607	21853	15630	727	21850	15684	776
7.Lakhimpur	23472	20529	839	29542	22935	739	33346	34078	1039	33346	31133	951	33390	29702	904
8.United Mikir and N.C.Hills	15793	13338	859	16997	18180	1037	17906	21455	1225	20234	19647	987	18200	26846	1499
9.Garo Hills	29137	18083	631	29137	19312	691	37595	26254	710	37595	26445	715	-	-	-
Pooled	486838	278185	581	510348	386037	769	560813	413187	749	557980	398396	727	527980	379573	731
State	496838	278185	581	510348	386037	769	560813	413187	749	557980	398396	727	527980	379573	731

Table-3 (A)

Statement showing the area, production and yield rate over five years of Winter paddy

Statement showing the area, production and yield rate over five years of Winter paddy										1969-70					1970-71					1971-72					1972-73					1973-74					1974-75					1975-76					1976-77					1977-78					1978-79					1979-80					1980-81					1981-82					1982-83					1983-84					1984-85					1985-86					1986-87					1987-88					1988-89					1989-90					1990-91					1991-92					1992-93					1993-94					1994-95					1995-96					1996-97					1997-98					1998-99					2000-01					2001-02					2002-03					2003-04					2004-05					2005-06					2006-07					2007-08					2008-09					2009-10					2010-11					2011-12					2012-13					2013-14					2014-15					2015-16					2016-17					2017-18					2018-19					2019-20					2020-21					2021-22					2022-23					2023-24					2024-25					2025-26					2026-27					2027-28					2028-29					2029-30					2030-31					2031-32					2032-33					2033-34					2034-35					2035-36					2036-37					2037-38					2038-39					2039-40					2040-41					2041-42					2042-43					2043-44					2044-45					2045-46					2046-47					2047-48					2048-49					2049-50					2050-51					2051-52					2052-53					2053-54					2054-55					2055-56					2056-57					2057-58					2058-59					2059-60					2060-61					2061-62					2062-63					2063-64					2064-65					2065-66					2066-67					2067-68					2068-69					2069-70					2070-71					2071-72					2072-73					2073-74					2074-75					2075-76					2076-77					2077-78					2078-79					2079-80					2080-81					2081-82					2082-83					2083-84					2084-85					2085-86					2086-87					2087-88					2088-89					2089-90					2090-91					2091-92					2092-93					2093-94					2094-95					2095-96					2096-97					2097-98					2098-99					2099-00					2100-01					2101-02					2102-03					2103-04					2104-05					2105-06					2106-07					2107-08					2108-09					2109-10					2110-11					2111-12					2112-13					2113-14					2114-15					2115-16					2116-17					2117-18					2118-19					2119-20					2120-21					2121-22					2122-23					2123-24					2124-25					2125-26					2126-27					2127-28					2128-29					2129-30					2130-31					2131-32					2132-33					2133-34					2134-35					2135-36					2136-37					2137-38					2138-39					2139-40					2140-41					2141-42					2142-43					2143-44					2144-45					2145-46					2146-47					2147-48					2148-49					2149-50					2150-51					2151-52					2152-53					2153-54					2154-55					2155-56					2156-57					2157-58					2158-59					2159-60					2160-61					2161-62					2162-63					2163-64					2164-65					2165-66					2166-67					2167-68					2168-69					2169-70					2170-71					2171-72					2172-73					2173-74					2174-75					2175-76					2176-77					2177-78					2178-79					2179-80					2180-81					2181-82					2182-83					2183-84					2184-85					2185-86					2186-87					2187-88					2188-89					2189-90					2190-91					2191-92					2192-93					2193-94					2194-95					2195-96					2196-97					2197-98					2198-99					2199-00					2200-01					2201-02					2202-03					2203-04					2204-05					2205-06					2206-07					2207-08					2208-09					2209-10					2210-11					2211-12					2212-13					2213-14					2214-15					2215-16					2216-17					2217-18					2218-19					2219-20					2220-21					2221-22					2222-23					2223-24					2224-25					2225-26					2226-27					2227-28					2228-29					2229-30					2230-31					2231-32					2232-33					2233-34					2234-35					2235-36					2236-37					2237-38					2238-39					2239-40					2240-41					2241-42					2242-43					2243-44					2244-45					2245-46					2246-47					2247-48					2248-49					2249-50					2250-51					2251-52					2252-53					2253-54					2254-55					2255-56					2256-57					2257-58					2258-59					2259-60					2260-61					2261-62					2262-63					2263-64					2264-65					2265-66					2266-67					2267-68					2268-69					2269-70					2270-71					2271-72					2272-73					2273-74					2274-75					2275-76					2276-77					2277-78					2278-79					2279-80					2280-81					2281-82					2282-83					2283-84					2284-85					2285-86					2286-87					2287-88					2288-89					2289-90					2290-91					2291-92					2292-93					2293-94					2294-95					2295-96					2296-97					2297-98					2298-99					2299-00					2300-01					2301-02					2302-03					2303-04					2304-05					2305-06					2306-07					2307-08					2308-09					2309-10					2310-11					2311-12					2312-13					2313-14					2314-15					2315-16					2316-17					2317-18					2318-19					2319-20					2320-21					2321-22					2322-23					2323-24					2324-25					2325-26					2326-27					2327-28					2328-29					2329-30					2330-31					2331-32					2332-33					2333-34					2334-35					2335-36					2336-37					2337-38					2338-39					2339-40					2340-41					2341-42					2342-43					2343-44					2344-45					2345-46					2346-47					2347-48					2348-49					2349-50					2350-51					2351-52					2352-53					2353-54					2354-55					2355-56					2356-57					2357-58					2358-59					2359-60					2360-61					2361-62					2362-63					2363-64					2364-65					2365-66					2366-67					2367-68					2368-69					2369-70					2370-71					2371-72					2372-73					2373-74					2374-75					2375-76					2376-77					2377-78					2378-79					2379-80					2380-81					2381-82					2382-83					2383-84					2384-85					2385-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Table 2.3(A)

Area in hectares
Production in tonnes,
Average yield in kg/hect.

Statement showing area, production and yield rate over five years of Potato.

District	1965-67			1967-68			1968-69			1969-70			1970-71		
	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield
1. Cachar	2064	7265	3520	2104	6104	2901	2104	6321	3128	2180	7944	3614	2200	4138	1831
2. Goalpara	6830	38225	5556	6330	37059	5393	7437	38663	5164	7280	34100	4684	6860	38725	5645
3. Kamrup	5059	20327	4018	5059	23959	4736	4856	30452	6271	5260	18626	3541	5000	23790	4758
4. Jarrang	4452	17728	3992	4654	12515	2699	4654	16540	3554	4050	10323	2549	4270	19019	4454
5. Nowgong	2226	4392	1973	2104	2996	1424	2023	5083	3007	1620	3295	2034	1550	3751	2420
6. Sibsagar	1214	6623	3803	1093	5333	4873	1093	6873	6233	1900	5423	2354	1050	5729	5456
7. Lakhimpur	3237	12961	4004	3237	13613	5750	3237	22133	6339	3230	11641	3549	3250	14248	4384
Pooled	25132	105521	4199	25131	106589	4241	25454	127330	5002	25570	91352	3573	24180	109400	4524
State	28305	119344	4199	23591	121263	4241	29914	144636	5002	29390	105002	3573	24670	111617	4524

Table -3.4(A)

Table -3.4(A)

Statement showing area, production and yield rate over five years of Jute

	Area in hectare,	Production in	bales of 180 Kg. Av. yield in	Kg./hec.
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District	1965-67		1967-68		1968-69		1969-70		1970-71					
	Area	Produce- tion. Av. yield	Area	Produce- tion. Av. yield	Area	Produce- tion. Av. yield	Area	Produce- tion. Av. yield	Area	Produce- tion. Av. yield				
1. Goalpara	34398	283173	34398	269496	1405	22259	19933	1603	32375	330595	1833	35000	302944	1558
2. Kamrup	32375	203063	33194	199293	1081	25091	154031	1105	30351	292064	1732	29600	181875	1106
3. Darrang	17604	173302	17604	194353	1935	15373	125587	1470	16137	149460	1662	20610	125950	1100
4. Nowgong	40671	240183	48562	321589	1192	32577	210122	1161	35208	240001	1227	36020	267148	1335
5. Garo Hills	6070	49707	6070	30356	915	6070	41613	1234	6070	43032	1454	-	-	-
Pooled	131119	954436	139919	1004561	1293	101374	730191	1296	120191	1061122	1589	121230	877917	1304
State	136196	991393	146010	1049060	1293	103112	778705	1296	128082	1130782	1589	129355	936779	1304

Table -3.5(A)

Statement showing area, production and yield rate over five years of Sugarcane

District	1966-67			1967-68			1968-69			1969-70			1970-71		
	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield
1. Cachar	3642	99245	27250	4153	115233	27547	4153	128370	30739	4460	145079	32529	4250	81311	19132
2. Goalpara	2630	75563	28733	2226	55000	24703	2630	33710	31829	2630	165203	62815	2430	110589	45510
3. Kamrup	4452	138724	31160	4452	134904	30302	4654	106013	22779	4660	230372	49436	4540	159227	35072
4. Darrang	2428	124333	51416	2428	97521	40165	2630	135416	51439	2730	149064	54236	2670	97453	32754
5. Nowgong	3237	76319	23577	3237	90545	27972	3440	112760	32779	3520	189052	53708	3380	124408	36307
6. Sibsagar	3094	297256	35490	8175	293679	35924	3296	304737	36739	8900	392446	44095	9050	390200	43116
7. Lakhimpur	3430	112506	40950	3430	159417	45522	3430	144051	41394	3440	209543	60915	3400	132175	33875
8. United Milk and N.C. Hills.	1902	46397	24394	*2023	*67396	33562	1942	97235	44946	2510	94225	37540	2510	114135	45472
Pooled	29865	990953	33173	30139	1013195	33562	31240	1102392	35293	32850	1573989	47914	32230	1199498	37217
State	30634	1016367	33173	30953	1039003	33562	32009	1129529	35293	33020	1582134	47914	32830	1221828	37217

* No crop estimation survey was conducted. Estimated figures are given, based on final forecast figures.

Area in hectares.
Production in tonnes.
(In terms of cane)
Average yield in kg/hect.
(In terms of cane)

Table -3.5 (A).

Statement showing area, production and yield rate over five years of Rape and Mustard

Area in hectares.
Production in tonnes.
Average yield in kg/hect.

District	1965-67		1967-68		1968-69		1969-70		1970-71	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
1. Jachar	2023	659	326	793	283	573	1920	511	281	534
2. Goalpara	24231	11925	437	11405	348	9359	26710	11512	431	26300
3. Kamrup	30351	6329	225	11017	229	6487	31970	6330	199	32190
4. Darrang	23067	10419	453	11040	393	9747	21330	9257	434	23270
5. Nongong	23512	3723	371	11230	458	10750	26100	9422	361	21390
6. Sibsagar	11331	9358	870	7308	369	4853	13400	6526	487	14700
7. Lakhimpur	9915	6534	559	4104	416	4293	10120	4043	400	14000
8. United Mikir & N.C. Hills.	2630	2522	959	*1124	*448	1566	2750	1873	681	2912
9. Garo Hills	4452	2271	510	*1934	*448	1260	4860	2095	431	-
Pooled	131562	59670	453	133930	359	48337	139060	51574	371	137140
State	131592	59679	453	133950	359	48387	139100	51589	371	137140

* No crop estimation survey was conducted. Estimated figures are given, based on final forecast figures.

Table -3.7(A).

Statement showing area, production and yield rate over five years of Matikalai

Area in hectares.
Production in tonnes.
Average yield in kg/hect.

District	1966-67			1967-68			1968-69			1969-70			1970-71		
	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield	Area	Production	Av. yield
1. Goalpara	12487	6291	503	12865	6092	474	12790	3300	258	12600	5242	416	10500	3964	368
2. Kamrup	14340	4402	307	14340	4402	307	14390	3108	216	16292	3926	241	16100	4009	249
3. Darrang	6343	3385	612	6637	4065	612	6645	2548	382	6695	2879	430	7340	3646	465
4. Nowgong	7213	2635	365	7557	2757	365	9030	3485	386	9630	4025	418	7100	2911	410
5. Sibsagar	3309	1691	511	4211	2153	511	4700	2280	495	4800	2630	548	2940	1005	342
Pooled	43702	18194	432	45610	19469	427	47555	14721	309	50017	13702	374	44480	15435	347
State	49958	21598	432	52113	22590	427	54061	16731	309	56390	21086	374	49565	17199	347

* Crop estimation survey was not conducted during the year.
The estimated figures are given based on final forecast.

Table 4.1

Frequency distribution of rice yields - Autumn rice

Yield in Kg./hectare	No. of experiments	Percentage to total
0/ 100	40	7.94
100/ 200	14	2.75
200/ 300	24	4.71
300/ 400	17	3.33
400/ 500	38	7.45
500/ 600	31	6.08
600/ 700	38	7.45
700/ 800	42	8.24
800/ 900	73	14.31
900/ 1000	33	6.47
1000/ 1100	40	7.94
1100/ 1200	39	7.65
1200/ 1300	23	4.51
1300/ 1400	21	4.12
1400/ 1500	7	1.37
1500/ 1600	6	1.18
1600/ 1700	7	1.37
1700/ 1800	5	0.98
1800 and above	12	2.35

T o t a l

510

100.00

Mean yield = 795 Kg./hectare

Coefficient of variation = 54.2%

Standard deviation = 431 Kg./hectare.

Table 4.2.
Frequency distribution of Plot yields - Winter rice.

Limit in Kg./hectare	No. of experiments	Percentage to total
0/ 100	11	1.75
100/ 200	2	0.32
200/ 300	9	1.43
300/ 400	6	0.95
400/ 500	24	3.82
500/ 600	18	2.86
600/ 700	25	3.97
700/ 800	41	6.52
800/ 900	43	6.94
900/ 1000	75	11.92
1000/ 1100	42	6.67
1100/ 1200	61	9.70
1200/ 1300	43	7.63
1300/ 1400	54	8.59
1400/ 1500	42	6.68
1500/ 1600	29	4.61
1600/ 1700	27	4.29
1700 /1800	21	3.34
1800/ 1900	22	3.50
1900/ 2000	12	1.91
2000 and above	17	2.70
T o t a l	629	100.00

Mean yield = 1135 kg./hectare
Coefficient of variation = 33.3%
Standard deviation = 440 kg./hectare.

Table 4.3
Frequency distribution of Plot yields - Potato

Limit in Kg./hectare	No. of Experiments	Percentage to total
0/ 500	7	1.91
500/1000	14	3.83
1000/1500	26	7.10
1500/2000	29	7.65
2000/2500	31	8.47
2500/3000	29	7.65
3000/3500	34	9.29
3500/4000	32	8.74
4000/4500	25	6.83
4500/5000	16	4.37
5000/5500	24	6.56
5500/6000	16	4.37
6000/6500	13	3.55
6500/7000	10	2.73
7000/7500	9	2.19
7500/8000	8	2.19
8000/8500	5	1.37
8500/9000	9	2.46
9000 and above	32	8.74
T o t a l	366	100.00

Mean yield = 4235 kg./hectare
Coefficient of variation = 59.5%
Standard deviation = 2520 kg./hectare

Table 4.4
Frequency distribution of Plot yields - Jute.
.....

Limit in Kg./plot	No. of experiments	Percentage to total
0/ 20	23	7.83
20/40	32	10.88
40/ 60	76	25.85
60/ 80	76	25.85
80/ 100	57	19.39
100/120	17	5.78
120/ 140	13	4.42
140/ 160	0	0.00
160 and above	0	0.00
T o t a l	294	100.00

Mean yield = 65 kg./plot. = 1316 Kg./hec.
Co-efficient of variation = 44.62%
Standard deviation = 29 kg/plot = 587 kg/hec.

Table 4.5

Frequency distribution of Plot yields - Sugarcane.

Limit in kg./plot	No. of experiments	Percentage to total.
1	2	3
0/ 20	6	2.30
20/ 40	23	8.81
40/ 60	46	17.62
60/ 80	39	14.94
80/100	45	17.24
100/120	37	14.18
120/140	35	13.41
140/160	15	5.73
160 and above	15	5.75
Total	261	100.00
Mean yield (in terms of Cane) = 89 kg./plot (35600 kg./hec.) Standard deviation = 41 kg./plot (16400 kg./hec.) Coefficient of variation = 46.1 %		

Table -4.6
Frequency distribution of Plot yields - Rape and Mustard.

Limit in kg./hectare	No. of experiments	Percentage to total
0/ 100	42	12.65
100/ 200	45	13.55
200/ 300	31	9.34
300/ 400	42	12.65
400/ 500	54	16.27
500/ 600	24	7.23
600/ 700	25	7.53
700/ 800	35	10.54
800/ 900	14	4.22
900/1000	3	0.90
1000/1100	3	0.90
1100/1200	9	2.71
1200 and above	5	1.51
T o t a l	332	100.00

Mean yield = 439 kg./hectare
Coefficient of variation = 66.5%
Standard deviation = 292 kg./hectare.

Table 4.7
Frequency distribution of Plot yields - Matikalai.

Limit in Kg./hectare	No. of experiments	Percentage to total
1	2	3
0/ 100	30	11.67
100/ 200	53	20.62
200/ 300	30	11.67
300/ 400	60	23.34
400/ 500	34	13.23
500/ 600	15	5.84
600/ 700	5	1.95
700/ 800	9	3.50
800/ 900	10	3.89
900/1000	1	0.39
1000/1100	4	1.56
1100/1200	1	0.39
1200 and above	5	1.95
T o t a l	257	100.00

Mean yield = 360 kg./hectare
 Co-efficient of variation = 72.2%
 Standard deviation = 260 kg./hectare.

Table-5.1

Analysis of Variance - Autumn Rice.

District	Between Districts		Between Circles		Between Villages		Between Fields	
	D.F.	M.S. in '00 (kg./hect.) ²	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²
1. Goalpara	2	3	4	5	6	7	8	9
2. Kamrup	-	-	14	2113	25	1421**	40	292
3. Darrang	-	-	10	6567*	39	2836**	50	482
4. Nowgong	-	-	5	3496	28	1409**	34	378
5. Sibsagar	-	-	7	1561	22	1961	30	1069
6. Lakhimpur	-	-	7	2723	17	2395**	25	613
7. Cachar	-	-	7	3613	18	1545**	26	299
8. United Mikir and N.C. Hills.	-	-	5	11302**	24	2418	30	2625
Pooled	7	47563**	55	4082**	192	2058**	255	722

* Significant at 5% level.

** Significant at 1% level.

Table 2.2

Analysis of variance - Winter Rice

	Between Districts		Between Circles		Between Villages		Between Fields	
	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²
1. Goalpara	2	3	4	5	6	7	8	9
	-	-	15	2909*	26	1013**	42	446
2. Kamrup	-	-	13	5332**	41	2003**	54	405
3. Darrang	-	-	5	9725*	33	3335	39	1964
4. Nongong	-	-	7	7262*	29	2210**	36	879
5. Sibsagar	-	-	9	6064	35	2926**	45	1013
6. Lakhimpur	-	-	7	2147	33	1231*	41	708
7. Cachar	-	-	5	2817*	29	1024	34	1996
8. United Mikir and N.O. Hills	-	-	-	-	21	1840**	22	179
Pooled	7	26052**	61	4947*	247	1986**	313	943

* Significant at 5% level.

** Significant at 1% level.

Table-5.3.

Analysis of variance - Potato

District	Between Districts		Between Circles		Between Villages		Between Fields	
	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²	D.F.	M.S. in '00 (kg./hec.) ²
1. Goalpara	2	3	4	5	6	7	8	9
	-	-	12	443770**	29	115461**	41	50415
2. Kamrup	-	-	11	105066	27	103090 *	39	50057
3. Darrang	-	-	5	330033**	26	65173	32	35689
4. Nowgong	-	-	3	364	9	29213	13	18949
5. Sibsagar	-	-	6	137461	10	141720**	17	20319
6. Lakhimpur	-	-	7	152028*	15	39937**	23	18563
7. Jachar	-	-	4	9913	13	23205	19	18367
Pooled	6	941057**	48	209633**	128	90410**	193	35570

* Significant at 5 % level. ** Significant at 1 % level.

Table-5.4(A)

Analysis of variance - Jute. (Green yield)

District	Between Districts		Between Sub-divisions		Between Villages		Between Fields	
	D.F.	M.S. (kg./plot) ²	D.F.	M.S. (kg./plot) ²	D.F.	M.S. (kg./plot) ²	D.F.	M.S. (kg./plot) ²
1. Goalpara	-	-	2	1675	39	895**	42	319
2. Kamrup	-	-	2	3200	39	2231**	42	143
3. Darrang	-	-	1	102	19	1116*	21	405
4. Nowgong	-	-	-	-	41	1205**	42	176
Pooled	3	10150	5	1970	138	1395**	147	240

* Significant at 5% level

** Significant at 1% level.

Table -5.4(9).
Analysis of variance - Jute

(Percentage ratio of dry to green yield)

.....

District	Between Districts		Between Sub-divisions		Between Villages		Between Fields	
	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.
1. Goalpara	2	3	4	5	6	7	8	9
	-	-	2	0.7300	19	1.1205**	22	0.1250
2. Kamrup	-	-	2	1.9535	12	4.1400**	15	0.3707
3. Darrang	-	-	1	0.1512	9	0.8300	11	0.5727
4. Nowgong	-	-	-	-	19	3.5963	20	2.1290
Pooled	3	7.2905*	5	1.0693	59	2.4876**	68	0.8410

* Significant at 5 % level.

** Significant at 1 % level.

Table -5.5.

Analysis of variance - Sugarcane.

District	Between Districts		Between Sub-divisions		Between Villages		Between Fields	
	D.F.	M.S. in (0000) (kg./hec.) ²	D.F.	M.S. in (0000) (kg./hec.) ²	D.F.	M.S. in (0000) (kg./hec.) ²	D.F.	M.S. in (0000) (kg./hec.) ²
1	2	3	4	5	6	7	8	9
1. Goalpara	-	-	2	255421*	3	55646*	11	16236
2. Kamrup	-	-	2	166997*	15	33329**	19	3168
3. Darrang	-	-	1	324	10	45938	12	19331
4. Nongong	-	-	-	-	15	39741**	15	5335
5. Sibsagar	-	-	2	535640	27	43552**	30	10541
6. Lakhimpur	-	-	2	62730	12	22237**	15	5107
7. Cachar	-	-	2	3744	15	31722**	13	4450
8. United Mikir and N.C. Hills.	-	-	-	-	9	22621**	10	829
Pooled	7	249714	11	196952**	112	37103**	130	7892

* Significant at 5 % level.

** Significant at 1% level.

Table -5.7
Analysis of variance - Matikalai.
.....

District	Between Districts		Between Sub-divisions		Between Villages		Between Fields	
	D.F.	M.S. in (OO) (Kg./hec.) ²	D.F.	M.S. in (OO) (Kg./hec.) ²	D.F.	M.S. in (OO) (Kg./hec.) ²	D.F.	M.S. in (OO) (Kg./hec.) ²
1. Goalpara	2	3	4	5	6	7	8	9
2. Kamrup	-	-	2	992	30	1136**	33	97
3. Darrang	-	-	1	537	28	246**	30	65
4. Nowgong	-	-	-	1192	20	320**	22	310
5. Sibsagar	-	-	2	-	23	1670**	22	555
Pooled	4	3519	7	5413**	17	680**	20	122
				2435	119	1314**	127	210

* Significant at 5 % level.

** Significant at 1 % level.

Table -6.1

Number of villages required for estimating the average yield with different sampling errors - Autumn Rice.

Percentage sampling error.					
	No. of fields per village					
		1	2	3	4	5
1	2601	550	299	163	104	26
2	1926	432	214	120	77	19
3	1701	425	189	106	68	17
4	1599	397	177	99	64	16
5	1520	380	169	95	61	15

Table -4.2

Number of villages required for estimating the average yield with different sampling errors- Winter Rice.

0.1 0.2 0.3 0.4 0.5

No. of fields per village	Percentage sampling error	1	2	3	4	5	10
---------------------------	---------------------------	---	---	---	---	---	----

1	1155	289	128	72	46	12
2	784	196	87	49	31	8
3	659	165	73	41	26	7
4	598	150	66	37	24	6
5	561	140	62	35	22	6

Table -6.3

Number of villages required for estimating the average yield with
different sampling errors - Potato

.....

No. of fields per village	Percentage sampling error.	1	2	3	4	5	10
1		2933	708	315	177	113	28
2		1964	491	218	123	79	20
3		1875	419	196	105	67	17
4		1530	393	170	96	61	15
5		1443	361	160	90	58	14

Table-6.4(A)

Number of villages required for estimating the average yield with different sampling errors-Jute (Plot yield of green harvest)

No. of fields per village	Percentage sampling error.								
	1	2	3	4	5	10	15	20	25	30
1	1934	494	215	121	77	19				
2	1650	413	193	103	66	17				
3	1555	389	173	97	62	16				
4	1508	377	168	94	60	15				
5	1479	370	164	92	59	15				

Table - 6.4(B)

Number of villages required for estimating the average yield with different sampling errors-Jute (Percentage ratio of dry and green weight)

.....

No. of fields per village	Percentage sampling error.	1	2	3	4	5	10
1		650	163	72	41	26	7
2		486	122	54	30	19	5
3		431	108	43	27	17	4
4		404	101	45	25	16	4
5		387	97	43	24	15	4

Table -6.4 (C)

Number of villages required for estimating the
average yield with different Sampling errors -
(Expected percentage Sampling Error of dry fibres)

Number of villages taken for harves- ting experiments	Number of villages taken for drilage experiments				
	200	150	100	75	50
200	3.3	3.4	3.6	3.8	4.2
150	-	3.8	4.0	4.2	4.6
100	-	-	4.6	4.9	5.1
75	-	-	-	5.3	5.6
50	-	-	-	-	6.5
					7.2
					5.3
					5.5
					6.0
					6.4
					7.2

Table-6.5

Number of villages required for estimating the average yield with different
Sampling errors - Sugarcane

.....

No. of fields per village	Percentage sampling error.					
	1	2	3	4	5	10
1	1624	406	180	102	65	16
2	1340	335	149	84	54	13
3	1245	311	138	73	50	12
4	1197	299	133	75	43	12
5	1169	292	130	73	47	12

Table -6.6

Number of villages required for estimating the average yield with
different Sampling errors-Rape & Mustard

.....

Percentage sampling error.	1	2	3	4	5	10
% of fields per village	4442	1111	494	273	173	44
	3358	840	373	210	134	34
	2993	749	333	197	120	30
	2810	703	312	176	112	28
	2704	676	300	169	108	27

Table-7.1

Estimates of average yield based on the results of the experiments supervised at harvest-stage and their comparison with the general results.

Autumn Rice

District	For Pre-assigned sample		For all experiments supervised at harvest stage		General results	
	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiment supervised.	Average yield (Kg./hec.)	No. of experiments conducted	Average yield (Kg./hec.)
I	2	3	4	5	6	7
1. Goalpara	12	732	12	732	90	747
2. Kamrup	22	562	22	562	100	597
3. Darrang	16	558	16	558	68	746
4. Nowgong	8	669	18	642	60	520
5. Sibsagar	2	912	6	816	50	776
6. Lakhimpur	15	903	17	811	52	904
7. Cachar	16	972	16	972	80	974
8. United Milkir and N.C.Hills.	9	1698	14	1604	40	1499
Pooled	100	719	121	704	510	731

Table-7.2

Estimates of average yield based on the results of the experiments supervised at harvest-stage and their comparison with the general results.

Winter Rice

District	For pre-assigned sample		For all experiments supervised at harvest-stage		General results	
	No. of experiments supervised.	Average yield (Kg./hec.)	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiments conducted	Average yield (Kg./hec.)
1. Goalpara	17	379	19	921	34	377
2. Kamrup	25	927	25	927	109	993
3. Darrang	18	1318	19	1318	78	1195
4. Nowgong	19	919	21	1002	73	1083
5. Sibsagar	16	1463	32	1449	90	1300
6. Lakhimpur	20	1071	22	1134	82	1135
7. Cachar	16	1134	20	1170	69	1258
8. United Mikir and N.C. Hills.	8	1425	3	1425	44	1515
Pooled	138	1114	165	1139	629	1126

Table-7.3

Estimates of average yield based on the results of the experiments supervised at harvest-stage and their comparison with the general results.

Potato

District	For experiments supervised at harvest-stage			General results	
	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiments conducted	Average yield (Kg./hec.)	
1. Goalpara	8	5324	92	5645	
2. Kamrup	15	5097	78	4738	
3. Darrang	18	6265	64	4454	
4. Nowgong	2	2741	26	2420	
5. Sibsagar	5	4494	34	5456	
6. Lakhimpur	3	5333	46	4394	
7. Cachar	12	1112	36	1892	
Pooled	69	4957	366	4524	

Table -7.4

Estimates of average yield based on the results of the experiments supervised at harvest-stage and their comparison with the general results

Jute

District	For pre-assigned sample			For all experiments supervised at harvest-stage			General results	
	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiments supervised	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiments conducted	Average yield (Kg./hec.)	
1. Goalpara	16	1500	19	19	1500	84	1558	
2. Kamrup	19	1267	19	19	1267	84	1106	
3. Darrang	16	1040	16	16	1040	42	1100	
4. Nowgong	15	1357	18	18	1357	84	1335	
Pooled	65	1322	70	70	1322	294	1304	

Table -7.5

Estimates of average yield based on the results of the experiments supervised at harvest stage and their comparison with the general results -

Sugarcane

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District	For experiments supervised at harvest stage			General results	
	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiments conducted	Average yield (Kg./hec.)	
1. Goalpara	2	3	4	5	
2. Kamrup	5	64971	22	45510	
3. Darrang	8	33650	38	35072	
4. Nowgong	7	43371	24	32754	
5. Sibsagar	5	47360	31	36907	
6. Lakhimpur	6	30400	60	43116	
7. Cachar	5	39900	30	38975	
8. United Mikir and N.C.Hills.	3	16050	36	19132	
	2	50000	20	45472	
Pooled	47	36338	261	37217	

Table-7.6

Estimates of average yield based on the results of the experiments supervised at harvest-stage and their comparison with the general results -Rape & Mustard.

District	For experiments supervised at harvest-stage			General results	
	No. of experiments supervised	Average yield (Kg./hec.)	No. of experiments conducted	Average yield (Kg./hec.)	
1. Goalpara	17	336	58	406	
2. Kamrup	10	291	62	344	
3. Darrang	-	-	53	463	
4. Nowgong	5	246	46	294	
5. Sibsagar	12	360	39	436	
6. Lakhimpur	8	526	30	547	
7. Cachar	10	270	18	376	
8. United Mikir and N.C. Hills.	6	923	22	959	
Pooled	68	346	332	412	

Table -7.7

Estimates of average yield based on the results of the experiments supervised at harvest-stage and their comparison with the general results -
Matikalai
.....

District	For experiments supervised at harvest-stage			General results	
	No. of experiments supervised	Average yield (kg./hec.)	No. of experiments conducted	Average yield (kg./hec.)	
1. Goalpara	14	522	66	368	
2. Kamrup	13	148	61	249	
3. Darrang	2	166	44	465	
4. Nowgong	3	794	46	410	
5. Sibsagar	10	467	40	342	
Pooled	42	364	257	347	

Table -3.1

Number of experiments supervised in Pre-assigned villages and others at harvest stage.

District	Autumn paddy				Winter paddy				J u n e			
	Pre-assigned experiments supervised at harvest stage.		Total experiments supervised at harvest stage.		Pre-assigned experiments		Other experiments supervised at harvest stage.		Pre-assigned experiments supervised at harvest stage.		Other experiments supervised at harvest stage.	
	Planned	Supervised	Planned	Supervised	Planned	Supervised	Planned	Supervised	Planned	Supervised	Planned	Supervised
1.	2	3	4	5	6	7	8	9	10	11	12	13
1. Goalpara	20	12	-	12	20	17	2	19	20	16	2	18
2. Kamrup	26	22	-	22	26	25	-	25	22	18	-	18
3. Darrang	18	16	-	16	22	19	-	18	16	16	-	16
4. Nowgong	16	8	10	18	18	13	3	21	22	15	3	18
5. Sibsagar	14	2	4	6	20	16	16	32	-	-	-	-
6. Lakhimpur	20	15	2	17	22	20	2	22	-	-	-	-
7. Cachar	16	16	-	16	18	16	4	20	-	-	-	-
8. United Mikir and N.C.Hills.	10	9	5	14	10	8	-	8	-	-	-	-
Pooled	140	100	21	121	156	138	27	165	90	65	5	70

Table-6.2

Number of experiments supervised at different stages

District	Autumn paddy			Winter paddy			Jute			Rape and Mustard		
	Stage of supervision			Stage of supervision			Stage of supervision			stage of supervision		
	Pre. H.	H.	P.H.	Pre. H.	H.	P.H.	Pre. H.	H.	P.H.	Pre. H.	H.	P.H.
1. Goalpara	2	3	4	5	7	6	3	9	10	11	12	13
2. Kamrup	8	22	6	9	25	19	2	19	14	12	17	2
3. Darrang	1	16	1	2	19	15	-	15	-	-	-	-
4. Nongong	2	19	1	14	21	19	4	19	4	4	5	2
5. Sibsagar	-	6	6	-	32	14	-	-	-	-	12	2
6. Lakhimpur	2	17	1	2	22	-	-	-	-	-	9	-
7. Cachar	-	16	-	-	20	6	-	-	-	-	10	-
8. United Mikir and N.C.Hills.	2	14	-	-	3	-	-	-	-	-	6	-
Total	15	121	15	29	165	23	5	70	19	17	69	8

Pre. H. = Pre-Harvest.

H. = Harvest.

P.H. = Post Harvest.

Table -3.2 (Contd.)

District	Sugarcane				Potato				Matikailal				Total			
	Stage of supervision				Stage of supervision				Stage of supervision				Stage of supervision			
	Pre. H.	H.	P.H.		Pre. H.	H.	P.H.		Pre. H.	H.	P.H.		Pre. H.	H.	P.H.	
1. Goalpara	2	6	-	-	3	5	-	-	14	12	4	94	34			
2. Kamrup	4	9	-	-	16	4	-	13	3	39	112	17				
3. Darrang	-	7	6	6	13	-	-	2	2	9	77	9				
4. Nowgong	3	5	-	6	2	6	-	3	5	44	72	14				
5. Sibsagar	-	6	-	-	5	-	-	10	6	-	71	28				
6. Lakhimpur	-	5	-	-	9	-	-	-	-	4	60	1				
7. Cachar	-	8	2	-	12	-	-	-	-	-	66	8				
8. United Mikir and N.C.Hills.	-	2	-	-	-	-	-	-	-	2	30	-				
Total	14	47	8	12	69	10	6	42	28	102	592	111				

Pre. H. = Pre-Harvest.
H. = Harvest.
P.H. = Post harvest.

Table -9.1.

Number of experiments planned and accepted for analysis for central irrigation experiments.

District	Autumn paddy		Winter paddy		Rape and Mustard		Matikaled	
	No. of experiments planned	No. of experiments accepted for analysis	No. of experiments planned	No. of experiments accepted for analysis	No. of experiments planned	No. of experiments accepted for analysis	No. of experiments planned	No. of experiments accepted for analysis
1. Goalpara	20	14	20	20	16	16	18	16
2. Kamrup	26	-	26	25	13	14	22	11
3. Darrang	16	16	22	18	16	16	16	12
4. Nowgong	16	13	18	17	16	12	16	12
5. Sibsagar	14	-	22	22	14	14	12	12
6. Lakhimpur	20	-	22	22	12	6	-	-
7. Cachar	16	16	18	18	3	9	-	-
8. United Mikir and N.C.Hills.	10	10	10	10	8	8	-	-
Pooled	138	69	158	152	108	94	94	63

Results of iriage experiments, 1970-71

Crop	Number of iriage experiments			Analysed	Reported	Driage ratio			Remarks
	Planned	Reported	Analysed			applied for estimating yield.	Total of plot yields before driage (in kg.)	Total of plot yields after driage. (in kg.)	
1	2	3	4	5	6	7	8		
a) Winter paddy	153	152	152	3.52%	234.226	214.046	The driage ratio for the state as a whole was used for estimating the yield.		
b) Autumn paddy	133	114	69	10.44%	114.579	102.613			
c) Jute :									
A) Goalpara	44	44	44	4.37			The district estimation of average yield of jute were worked out from the average yield of green harvest and average percentage ratio of jry to green yield.		
B) Kamrup	42	30	30	4.46					
C) Darrang	22	22	22	5.50					
D) Nowgong	44	40	40	5.47					
Total	152	136	136	5.06					
d) Rape and Mustard	103	94	94	9.14%	72.217	66.342	The driage ratio for the state as a whole was used for estimating the yield.		
e) Sugarcane	26	26	26	10.51%	2610.000	274.333			
f) Matikailai	84	63	63	5.79%	46.498	43.806			

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Details of work load of Primary Staff, 1940-41

District	Agency	Total strength	Total number of experiments assigned				No. of Primary workers with			Total
			Primary field work	Kharif	Rabi	Total	4 expts. or less	5 to 8 expts.	More than 8 expts.	
1. Goalpara	S	7	243	242	490	-	-	7	-	-
2. Kamrup	T	9	296	278	574	-	-	1	7	-
3. Darrang	A	7	188	194	382	-	-	-	7	-
4. Nowong	T	6	220	179	398	-	-	-	6	-
5. Sibsagar	I	6	140	172	312	-	-	-	6	-
6. Lakhimpur	S	6	134	110	244	-	-	-	5	-
7. Cachar	I	4	132	92	224	-	-	-	4	-
8. United Mikir & N.C.Hills.	C A	4	34	44	128	-	-	1	3	-
Total	L	49	1412	1310	2752	-	-	48	45	-
										47

Table 12.1

Details of equipments supplied to the Field Staff, 1970-71

District	Primary workers		Number of items supplied to the field staff.							Remarks.	
	Designation.	Number	Tape	Cord or string	Hessian cloth	Leather balance	Standard weight	Spring balance	Bags for drriage		Kit box or kit bag.
1. Goalpara	Field Assistant	7	7	Supplied	-	7	One set to each P/A.	7	24	7	
2. Kamrup	-do-	8	8	-do-	-	8	-do-	8	Supplied as required	8	In Kamrup one post of Field Assistant was vacant
3. Darrang	-do-	7	7	-do-	-	7	-do-	7	28	7	
4. Nowgong	-do-	6	6	-do-	-	6	-do-	6	Supplied as required	6	
5. Sibsagar	-do-	6	6	-do-	-	6	-do-	5	42	5	
6. Lakhimpur	-do-	6	6	-do-	-	6	-do-	6	24	6	
7. Cachar	-do-	4	4	-do-	-	4	-do-	4	19	4	Pegs were locally procured.
8. United Mikir & N.C.Hills.	-do-	4	4	-do-	-	4	-do-	4	30	4	

In Kamrup one post of Field Assistant was vacant

Table-13.1

Statement showing the details of Training to the field staff engages in Crop Estimation Surveys. 1970 - 71.

		State Officers Imparting Training				N.S.S. Participants				Remarks
Centre	Districts	No. of Officers deputed from State Headquarters	Designation	Total strength	No. called	No. attended	Designation	No. attended	No. attended	
1	2	3	4	5	6	7	8	9	10	11
1. Goalpara										
			Statistical Officer	1	-	-				
			Inspector of Statistics	3	2	1				
			Field Assistants	7	6	3				
2										
Gauhati 2. Kamrup			Statistical Officer	1	1	1	Superintendent	1		
			Inspector of Statistics	3	3	3			Assistant Superintendent.	1
			Field Assistants	9	4	4	Assistant Superintendent	1		
3. Darrang										
			Statistical Officer	1	1	1				
			Field Assistants	7	6	4				

The post of Statistical Officer was vacant at that time. One Inspector was in-charge of Statistical Officer. Reason for absence of one Field Assistant was not known. Two Field Assistants were on leave. One post of Field Assistant was vacant. One Field Assistant was on leave and four posts were vacant at that time. One post of Field Assistant was vacant at that time and two Field Assistants were on earned leave.

Table-13.1 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Nowgong	1. Nowgong										
	Statistical Officer			1	1	1					One post of Field Assistant was vacant at that time.
	Inspector of Statistics			1	1	1					
	Sub-Inspector of Statistics			1	1	1					
	Field Assistants			6	5	5					
2. Jachar	Statistical Officer	2		1	1	-	Superintendent	1	-	-	Statistical Officer could not attend due to illness.
	Field Assistants			4	4	4					
3. Mikir Hills	Statistical Officer			1	1	-					Statistical Officer could not attend due to illness of his wife.
	Inspector of Statistics			1	1	1					
	Field Assistants			4	4	4					Two Field Assistants were on earned leave and one Field Assistant was sick at that time.
1. Sibsaagar	Statistical Officer			1	1	1					One Inspector of Statistics & one Field Assistant were on leave.
	Inspector of Statistics			2	2	1					
	Field Assistants			6	6	5					
Jorhat		1					Superintendent	1	Assistant superintendent=	1	
	Statistical Officer			1	1	-					The Statistical Officer could not attend as he was pre-occupied with other works.
	Inspector of Statistics			2	1	-					I.S. called was busy with other works. One F.A. was under order of transfer. One post of F.A. was vacant.
	Field Assistants			6	5	4					

Let

- (a) X_{ijk} be the yield from the k th experimental plot of the j th village of the i th circle. Each plot is taken from $(\frac{1}{400})^{th}$ of a hectare.
- (b) \bar{X}_i be the average yield of the i th circle
- and (c) m_i = number of villages in the i th circle.

1. The average yield for the i th circle is given by

$$\bar{X}_i = \sum_{s_{jks}} x_{ijk} / m_i \quad (K = 1, 2, J = 1, 2, \dots, m_i)$$

Where s_{jks} represents summation over villages and fields respectively. The average yield for the district is obtained by weighting the average yields of circles in proportion to the respective circle areas under paddy

$$\bar{X} = \sum_{s_i} a_i \bar{X}_i / s_i a_i$$

Where a_i - area under paddy in the i th circle and s_i denotes summation over circles. Similarly the average yield for the districts is obtained from the district average by using the relation.

$$\bar{X} = \sum_{s_i} a_i \bar{X}_i / s_i a_i$$

Where $s_i a_i$ area under paddy in the district and s_i represents the summation over the districts.

Mean yield of dry paddy in kg/hect. = $X \times 400 \times d$ where d is the drying ratio of dry paddy to wet paddy. The weight of cleaned rice is reckoned as 62.5 p.c. of dry paddy.

II. The mean square between fields within villages and that between villages are obtained from the plot yields.

For the i th circle the mean square between fields within villages is given by.

$$F = s_{jks} (\bar{x}_{ij} - x_{ijk})^2 / m_i$$

based on m_i degrees of freedom, and the mean square between villages is $E = s_j^2 (x_{ij} - \bar{x}_i)^2 / (m_i - 1)$ based on $(m_i - 1)$ degrees of freedom.

The mean square between circles in a district is given by $s_{mi}^2 (\bar{x}_i - \bar{X})^2 /$

$L-1$ based on $L-1$ degrees of freedom, L being the number of circles in the district.

The pooled mean squares for the individual districts and for the region as a whole are easily obtained by pooling the circle mean-squares and district mean-squares respectively.

It may be shown that F is an unbiased estimate of the true variance between fields within villages while E is an unbiased estimate of

$$KV + F$$

Where, $K = \frac{1}{m_1 - 1} (s_j k_j - \frac{s_j k_j^2}{s_j k_j})$

k_j being the number of fields in the j th village,

Since $k_j = 2$ for all j , the above reduces to $2V + F$

Hence, an estimate of the true variance between villages is given by

$$\frac{E - F}{2}$$

III. The sampling variance of the estimate of the circle average yield is given by

$$V(\bar{x}_i) = \frac{s_j k_j^2}{(s_j k_j)^2} V + \frac{1}{s_j k_j} F.$$

$$\frac{(2V + F)/2m_1}{\frac{E}{2m_1}} \text{ as } k_j = 2 \text{ for all } j$$

The sampling variance of the estimate of the average yield for a district is given by

$$V(\bar{x}) = \frac{s_1 a_1^2 V(\bar{x}_i)}{(s_1 a_1)^2}$$

Similarly the sampling variance of the estimate of average yield for the combined districts is given by

$$V(\bar{x}) = \frac{s_a^2 V(\bar{x})}{(s_a)^2}$$

The corresponding sampling errors are the square roots of the above variances. The S.E. in kg/hect is obtained by multiplying this root of variance by 400.

IV. It is known that the sampling variance of the estimated average yield for tract is given by

$$V(\bar{x}) = \frac{V}{m} + \frac{F}{mn}$$

Where m is the total number of selected villages

n is the number of fields per village

V is the true variance between villages

F is the true variance between fields.

The number of villages is distributed among the different strata in proportion to the area under the crop.

By using the values of X , V and F for the tract, above formula is used to judge the scale of sampling villages and experimental plots per village for any assigned degree of accuracy of the estimated average yields.

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